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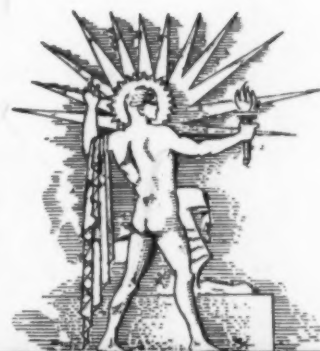
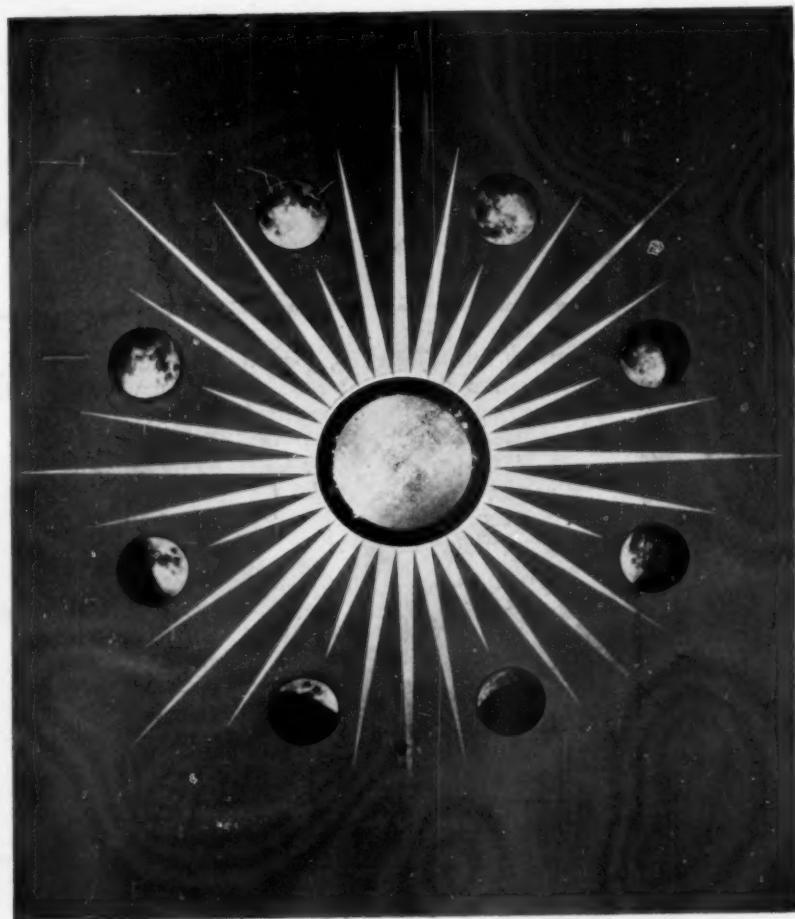
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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



December 17, 1938

Heavenly Ornaments

See Page 391

A SCIENCE SERVICE PUBLICATION

Do You Know?

Vaccination gets its name from the Latin word for cow.

The shad spends most of its life in the sea, but migrates into fresh water to spawn.

A Johns Hopkins University eye specialist has set out for the Arctic, to see whether he can aid Eskimos suffering from night blindness.

European countries are so anxious to become self-sufficient in motor fuel as a safeguard against wartime blockades, that in 1937 substitute motor fuels attained an all-time record use in Europe.

The Talmud, ancient Jewish book of canonical and civil law, ascribed contagious diseases to tiny "dangerous ones" which were destroyers—a good description of germs for an era long before the discovery of the microscope.

A Danish physician reports that there has been an outbreak of "parrot fever" every September for the past five years among women in the Faeroe Islands, and that it is apparently carried by the Arctic petrels which the women prepare for food.

Among cities specializing in profuse planting of flowers are Belleville, Michigan, which goes in for petunias; Tampa, Florida, the "Oleander City"; Grand Rapids, Michigan, which borders its sidewalks with wild violets; and Rochester, N. Y., which features lilacs.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

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PUBLIC HEALTH

How do chemistry and physics improve health? p. 393.

Where has horse sleeping sickness now spread? p. 392.

Average-sized tires on an automobile revolve 43,000 times an hour if the car is driven at 60-mile-an-hour speed.

Carbolic acid, important to Japanese munitions industry, is running short in Japan and distribution may be controlled.

The American Red Cross made itself a new record last year by instructing half a million persons in life saving, first aid, and swimming.

The Russian dramatist Chekhov was a physician, and gave his pet dogs medical names—Bromide and Quinine.

A stretched rubber band snaps at 204 miles an hour, as measured by ultra-high-speed motion pictures recently taken.

New house roofing materials introduced in Germany are featured in camouflage colors of green, brown, and yellow.

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GENERAL SCIENCE

Dead Head and Live Tenor Aid Study of Human Voice

**Carnegie Institution Reviews Its Achievements
In New Yearbook and the Annual Exhibition**

A DEAD man's head, equipped with an artificial voice-box, collaborated with the very-much-alive Lawrence Tibbett in supplying new information on the human voice and where it comes from, in researches reported in the *Yearbook* of the Carnegie Institution of Washington.

These experiments are still being carried out, their results to date were collated for the present *Yearbook* by Prof. G. Oscar Russell of Ohio State University, research associate of the Carnegie Institution. They are aimed at getting more definite information regarding the respective parts played by the larynx or voice-box and the various nose, mouth and throat cavities in the production of the human voice.

In the dead-man's-head experiment, an actual cadaver head was used. It was given an artificial larynx, through which sounds were produced. Then the sinuses and other cavities were filled up or otherwise blocked out of action, while sensitive electro-photographic instruments made records of changes thus induced in the sound waves.

Lawrence Tibbett's contribution to science was his consent to have motion pictures made down his throat, showing his vocal cords in action. Using these, Prof. Russell has been constructing life-size models in hard plaster and resilient materials of the great tenor's vocal apparatus, in the various positions it showed during the production of different vowels, pitches and voice qualities.

Early American "Bowl"

NOTHING new under the sun are California's famous Rose Bowl and its companion bowls in other parts of the country, that will presently be filled with howling football fans. At Pechal in Yucatan, Dr. A. V. Kidder and his colleagues of the Institution's division of historical research found a peculiar elliptical mound, broken only in four places, as if for entrances.

When they dug away the covering earth they brought to light a series of

eighteen to twenty steps, running up to a high wall, quite in the manner of a modern football field. The seating capacity, very conservatively estimated, is placed at 8,000. The court enclosed by this ancient grandstand is more nearly square than a modern football field. It is approximately 225 by 250 feet. Its use can only be conjectured; perhaps it was for athletic contests, perhaps for religious ceremonials.

Indian Baby Mummy

THE pathetic little mummy of an Indian baby who died many centuries ago was one of the features of the annual exhibit of the Carnegie Institution of Washington. Its skin turned parchment-like with the drought of the

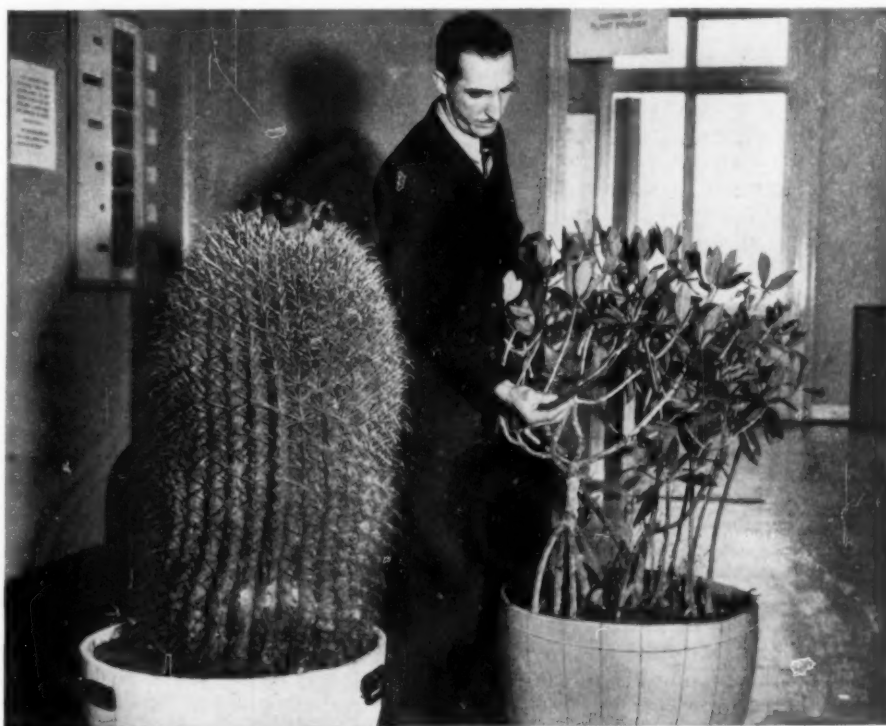
ages, the little one lies on its back under a woven coverlet, with its toys laid about it, to take into the next world.

Nearby, in a separate case, is the mummy of a woman of the same Southwestern culture-group, the Basket-Makers. Mummification of the burials of this people does not resemble that of the ancient Egyptians; the Basket-Makers had no art of embalming, and their mummies resulted simply from the natural drying out of the bodies in the arid air of their caves.

Desert plants of two widely different types, from habitats far apart, stand nearly side by side in the exhibit hall. One is easily recognized as a desert inhabitant; it is a 350-pound barrel cactus from the Arizona desert—a valuable source of water to hard-pressed travelers in the dry country.

The second is not so easily imagined as a desert plant, for it is a mangrove clump from the Gulf coast of Florida, which normally stands on its stilt-like roots actually in the water. But the water is salt, and as unpalatable to plants as it is to humans, so that the plant shows the thick, hard leaves with shining, varnished surfaces that one finds in arid regions.

Half a million years of man's earliest



XEROPHYTE MEETS XEROPHYTE

The mangrove, whose "viviparous" seedling Dr. T. D. Mallery is shown examining, is as much a xerophyte, or desert plant, as the barrel cactus, even though it grows with its roots constantly in water. The water is salt, and therefore "dry."

prehistory was a leading feature among the exhibits.

From southern Asia and its adjacent islands come exhibits of the most recently discovered human fossils and the earliest crude stone tools, brought by Dr. Hellmut de Terra, who has been working in Burma, and by Dr. G. H. R. von Koenigswald, who has dug the river gravels of Java.

Java in particular has yielded rich returns to the inquiring spades of the paleontologist and archaeologist. Beginning with some sensational new finds of *Pithecanthropus*, the Java ape-man, three distinct types of prehistoric man have been turned up on that island, forming a human-evolutionary sequence.

Backing up the strictly human finds in Burma and Java are fossils of man-like ancient apes found farther west, in the Siwalik Hills of India.

Underlying Unity

UNITY, underlying all the apparent diversities of research in a hundred fields of science, is stressed by Dr. John C. Merriam, in his last report as president of the Carnegie Institution of Washington. Dr. Merriam retires from the presidency on Jan. 1, to be succeeded by Dr. Vannevar Bush of the Massachusetts Institute of Technology.

Keeping the idea of fundamental unity always in sight is of particular importance in the conduct of an organization that promotes and supports so many and such diverse research programs, Dr. Merriam feels. No matter how thorough and accurate is the work of researchers, if each man's knowledge is permitted to stay unmixed in its own special, idea-tight compartment, a large part of its real value remains unrealized. Full worth of separately-gained data comes only through synthesis.

Science News Letter, December 17, 1938

GEOLOGY

Geologic Santa Claus Comes Up Earth's Great Chimneys

SANTA CLAUS comes up, not down, earth's greatest chimneys. Volcanoes have been for ages the avenues through which gifts from earth's internal stores have been brought to the surface, where the thin film of living beings can make use of them.

Varied indeed have been the gifts that have come to us up these chimneys of Vulcan. They range all the way from gold and diamonds to the dirt we plow and the water we drink.

Many metals, especially the heavier and rarer ones, are usually found associated with massive volcanic rock formations. The theory is that they were dissolved by the acid vapors deep under the surface, carried up near the top, and there deposited in the concentrated form which we find workable.

Non-metals, too, have come by the same route. Sulfur is obvious. Less so, but of even greater importance, is the free chlorine that is part of volcanoes' breath, for it combines with sodium to form the salt without which we can not live.

Most abundant of all the gases spouted forth by volcanoes is that compound we know as the most indispensable and universal of all liquids—water. Water is part of the crystalline structure of rocks,

and as the rocks are broken apart chemically in the course of volcanic action, this water is torn away, makes its way to the surface, and wins its freedom from age-long stony bondage to become the intimate companion of life, and indeed part of life itself.

Up the volcanic chimneys also comes another gas important to life. It is the same gas that rises through man-made chimneys—carbon dioxide. Captured by plants, it is woven into food. In the bodies of animals, it is united with phosphorus and calcium to become bones and shells. Ultimately, we owe even coral and pearls to volcanoes!

This is only the beginning of the list, but it should suffice to show us that, behind those false whiskers, Santa Claus is really Vulcan.

Science News Letter, December 17, 1938

GEOLOGY

Rocks Flow, Then Break, Harvard Studies Show

Duplicating Conditions in the Earth's Crust, Physicist Finds Strong Steady Stress Will Fracture

NEW clues to the underground mechanism causing earthquakes, mountain formation, and other geological phenomena have been found by a Harvard physicist in the action of rocks under tremendous laboratory pressures.

David Griggs, junior fellow in geophysics, has utilized the high pressure equipment of Prof. P. W. Bridgman, to duplicate the pressure conditions in the earth's outer crust—a granitic layer extending down 30 to 50 miles.

Under the high confining pressures, which reached a maximum of about 300,000 pounds per square inch, it was found that limestone could be made to flow. A small block of it was compressed 35 per cent. in length without shattering.

Contrary to past geologic beliefs it was found that, under high pressure, rocks will not flow indefinitely but will break if deformation is carried far enough; and it was found that sudden differential stress is not required to produce fracture under high confining pressure, but that a strong steady differential pressure will cause fracture if applied long enough.

In the tests a specimen of rock is

placed in a thick steel cylinder. Hydraulic confining pressure is applied through a liquid, or at very high pressures through lead. In addition a direct differential pressure is exerted on the specimen by a steel piston. Differential pressures used attain more than 1,500,000 pounds per square inch. The tests are made, it was said, under the highest one-directional stress ever controlled and measured in laboratory research.

Quartz, which is geologically important as one of the commonest minerals, remained brittle under the very highest pressures. The only change in quartz, aside from fracture, was an alteration of optical quality known as "undulatory extinction." Prior to these tests it was thought that quartz might become plastic under the high pressures.

Mr. Griggs' tests show that the flow of rocks under pressure is mathematically similar to the flow of metals. Rock substances beside limestone in which flow has been observed in the laboratory include glass, rock salt, calcite crystals, talc, shale, and marble.

The research has been supported by the Geological Society of America and Harvard University.

Science News Letter, December 17, 1938



A GALLACKER

This North Carolina girl facing the morning sun is hunting galax leaves, laurel sprays, Leucothoe and other evergreens for Christmas decorations.

MEDICINE

Influenza And Colds Are Attacked From New Angle

Repeated Inoculations of Virus Are Followed By Changes in the Nasal Membranes of Animals

A NEW line of attack on the common cold and influenza is being made in the laboratories of the International Health Division of the Rockefeller Foundation.

The attack is centering on changes occurring in the nasal lining membranes during a cold or an attack of influenza—changes which may give you resistance or immunity to colds and 'flu and similar infections of nose, throat and other respiratory organs.

Drs. Thomas Francis, Jr., and C. H. Stuart-Harris have found such changes in nasal membranes of ferrets which received repeated inoculations of influenza virus.

If they could find a way to induce such changes by permanent alteration of human nasal linings, it might be possible to confer resistance to influenza and the common cold in man.

The changes in the ferret nasal membranes, described in the *Journal of Experimental Medicine*, (December) are

changes not so much in the structure of the membranes as in their functioning. In the ferrets the changes result in complete resistance not only to the influenza virus itself but also to chemicals.

The immunity or resistance thus induced is entirely a matter of cell resistance and has nothing to do with immunity in the usual sense. The latter immunity depends on the existence in the blood of germ-fighting substances called antibodies.

Both mechanisms, antibody formation in the blood and changes in cells, probably interact to produce complete immunity to infection.

When the change in the nasal linings has once been induced, even after the resulting resistance has worn off and the animal is again susceptible to influenza, the nasal linings go through the change very rapidly when the next infection comes. These changes after the first one are so rapid that there are

scarcely any symptoms of the infection that could be recognized as sickness.

Turning from ferrets to humans, the Rockefeller scientists want first to find out whether such changes occur naturally in human nasal linings during colds or influenza. Two other important questions to be answered are: (1) Can these changes be induced artificially, so as to give immunity to these ailments? (2) Would it be good from the physiological standpoint to induce such changes or would they interfere too much with the normal function of the nose?

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MEDICINE

Scientists Still Seek Perfect Anesthetic

GENERAL anesthetics have been used to produce pain-free oblivion during surgical operations for nearly 100 years, but the search for an ideal anesthetic still goes on in laboratories and operating rooms all over the world. Large numbers of chemicals have been tested for anesthetic properties, but, while some are better than others, none of them can be called perfect.

"A perfect general anesthetic," says Prof. V. E. Henderson of the University of Toronto, Can., Faculty of Medicine, "should produce not only absence of pain and loss of memory of the operation, but complete unconsciousness and such a deep depression of the central nervous system that painful stimuli do not produce any muscular reflexes and have as little effect as possible upon the respiratory, cardiac or other medullary reflex centers. It should further produce a state of very low tonus in muscles; complete relaxation of abdominal walls, as the surgeon puts it.

"It should produce its effect quickly without setting up undesired reflexes from the respiratory passages or elsewhere, and be free from direct stimulant effect on the basal ganglia when in low concentrations in the body. Its effects should pass off quickly and completely, leaving no indication of its action. Lastly, it should allow of the inhalation of adequate amounts of oxygen throughout its administration.

"No anesthetic has as yet fulfilled all these requirements."

Besides these effects on the body, the ideal anesthetic should have certain physical and chemical properties. It must have high solubility in lipoids as compared with its solubility in water. Lipoids are fatty substances found in the body. The ideal anesthetic must also

have high chemical stability in the body.

Summing up the situation before the royal Society of Canada recently, Prof. Henderson said:

"It is hard to see in what direction to turn in the search for an ideal general anesthetic."

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ORNITHOLOGY

Biologists Find a Way To Keep Starlings Away

But Architects, Clinging to Old Traditions, Fail to Adopt Their Suggestions, So Birds Annoy

STARLINGS are now moving from their summer and autumn roosts in street trees to the better shelter which the cornices and window ledges of buildings give them against winter weather. They will continue to befoul the fronts of the buildings and to bespatter sidewalks—and the hats of luckless pedestrians.

Means for discouraging starlings from roosting on building fronts have been worked out by scientists of the U. S. Biological Survey. They have been urgently recommended to architects, but the architects, both government and private, have blandly ignored the recommendations. And the starlings continue to clutter up the building fronts all winter long.

Simplest of the anti-roosting devices, and among the most effective, are what E. R. Kalmbach of the Biological Survey calls "slope boards." These are surfaces of wood, concrete, or other materials set at steep angles on top of the flat ledges, cornices, capitals and other architectural details where starlings like to roost. The birds can no more perch for the night on a 45-degree smooth surface than you could sleep on a mattress at that angle.

These starling-proof slopes could easily have been made part of the original architectural design of the new government buildings in Washington, as well as of private buildings everywhere. But the architects preferred to stick to the flat top surfaces of tradition.

In Washington, some slope boards have been installed, at greater expense, in a few places on the new buildings, where the starlings have done exactly what the biologists told the architects they would do. On one of the most imposing of the new edifices, the Archives Building, the starling pest had become so bad that electrically charged wires were strung, and these drove the pests away. But

most of the buildings, here and elsewhere in the starling-infested parts of the country, are still unprotected.

Slope boards are by no means the only anti-starling devices which biologists are trying out. For older buildings, with more architectural curlicues around their upper parts, complete enclosure of the top story front in netting, of either wire or cordage, is recommended. Such netting is practically invisible from sidewalk level, on buildings tall enough to be favored as roosting places by the starlings.

The biologists are also trying out big cage-traps, placed in suburban spots where the birds gather in flocks for their final flight into the city, after feeding all day in the country. Poison baits have been tried but were found ineffectual; starlings are such omnivorous feeders that they would not take enough of any bait, however tempting, to get fatal doses.

It is not expected, or even desired, to wipe out the starling flocks altogether. The birds, though pests in the city, are useful destroyers of insects in the country during certain seasons. But it is hoped that means can be found to reduce their numbers, and above all, to discourage them from their misguided choice of winter roosting places.

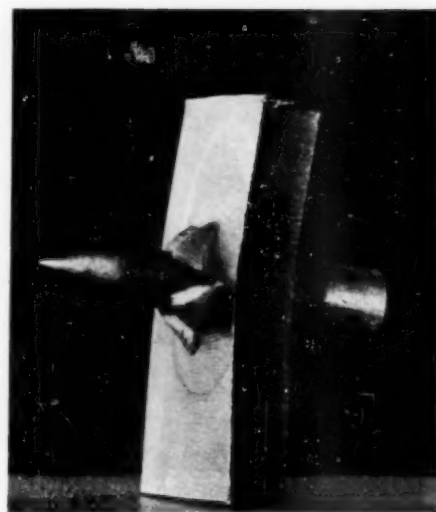
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ENGINEERING

Steel Industry Keeps Young Through Research

STEEL once was considered the oldest among industries which did not know that constant research is the secret of perpetual rejuvenation. A decade or more ago there was a certain amount of scorn among practical steel men for too much flavor of research scientist.

Now that attitude has changed and



A TEST

This steel plate, three-eighths inch thick, was pierced by a spike cut from the same plate. How? Because the spike after being cut and turned down to a point, was hardened by heat treatment. The test was made in the research laboratory of the U. S. Steel Corp.

the industry has changed with it. Just one of the big steel concerns has some 86 laboratories that conduct research primarily or incidentally, spending a cool \$1,800,000 annually in scientific searchings. U. S. Steel Corporation began its major fundamental research program on a large scale in 1928.

Evidently it is good business for steel as it is for other fields. Dr. Rufus E. Zimmerman, vice-president in charge of research and technology for U. S. Steel Corporation, feels sorry for any steel expert who retired, say, 25 years ago, and who would try a come-back. He would be embarrassed by the mere size of open hearths and blast furnaces, feel out of place in continuous mills, hot and cold rolling a multitude of flat products, and need an interpreter for the new steel lingo of "slag-metal equilibrium," "measured deoxidation," or "controlled grain size." Alloy steels, including the stainless varieties, produced in electric furnaces would puzzle him.

Off production lines at the rate of so many miles per hour come steel products that would have been minor miracles a few years ago. Take the shiny steel sheet that goes into a huge press and comes out the two sides and top of an automobile. Those several square yards of metal must not crack under the strain of the terrific stretching and must be flawless on the surface.

A thousand automobile parts must be identical twins, one with another. Each

must have the same desired grain size in order to harden the same way so as to act identically in the unrelenting rush of manufacturing and assembly.

Steel is even challenging the light metals, such as aluminum, in the airplane and streamlined train field. Stainless sheets as thin as 4/1000 inch and up to 190,000 pounds per square inch tensile strength are being produced that steel may do its share in speedy transportation.

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CHEMISTRY

Chemical Society Asks News Of Any Suppressed Patents

THE AMERICAN Chemical Society, through a notice to members under the signature of Dr. Charles L. Parsons, secretary, has asked its members to report to the Society any cases of patents suppressed to prevent their further development and commercial exploitation.

Referring to recurrent reports of such suppressions, Dr. Parsons declares "this matter of the suppression of patents is one of great importance to the American people, and if the rumors are true, they should be informed thereof."

Suppression of patents has been repeatedly charged in connection with several recent proposals that the U. S. patent laws be revised to make such a practice impossible and to correct other abuses with which the present patent system is charged.

"Such information," Dr. Parsons states, "to be effective, must of course be accompanied by definite statement in sufficient detail for presentation to any congressional committee on patents before whom a representative of this organization may appear."

Such information as is gained, it is intimated, will be used when the Society, in conjunction with a number of other technical groups, appears before the Congressional committees on patents to consider basic changes in the law which are expected to be introduced at the next session of Congress.

Sponsored by Representative William D. McFarlane, one bill would limit to five years the absolute monopoly now granted for 17 years. At the end of five years, if the patent holder has engaged in monopolistic practices or has refused to develop the patent to the stage of commercial application, compulsory licensing would occur. Determination of whether monopolistic practice or of suppression has been resorted to would be in the hands of a Patent Office agency.

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GENERAL SCIENCE

Wrong to Use Darwin's Ideas To Justify Aggression

Retiring Editor of Nature Calls Ideal of Conquest By Force a Reversion to the Law of the Jungle

DARWIN's evolutionary teaching, often cited in support of ruthless aggression and striving for power, is grossly misinterpreted when so used, declared Sir Richard Gregory, Bart., F. R. S., in a lecture in Washington, D. C. "Evolution embodies the idea of social ethics and makes the welfare of the community the essential purpose of the life of the individual," he told his audience.

Sir Richard, for a great many years editor of the British science journal, *Nature*, gave the dedicatory address of the new Elihu Root Hall of the Carnegie Institution of Washington. The hall constitutes a memorial to the late American statesman, who was also a trustee of the Institution.

"Any nation or people which separates itself from the rest of the world in the name of race or religion, and cultivates ideals of conquest by force in order to assert its claims, is reverting to the law of the jungle and retarding the higher evolution of mankind," declared the speaker. He continued:

"The view that the sole function of science is the discovery and study of natural facts and principles without regard to the social implications of the knowledge gained, can no longer be maintained. It is being widely recognized that science cannot be divorced from ethics or rightly absolve itself from the human responsibilities in the application of its discoveries to destructive purposes in war or economic disturbances in times of peace.

"Men of science can no longer stand aside from the social and political questions involved in the structure which has been built up from the materials provided by them, and which their discoveries may be used to destroy. It is their duty to assist in the establishment of a rational harmonious social order out of the welter of human conflict into which the world has been thrown through the prostitution of the rich gifts with which they have endowed the human race."

In the course of his lecture, Sir Richard traced the history of the im-

pact of scientific ideas on human beliefs and social behavior. The first well-developed science was astronomy, which reached a high state in Egypt and other nations of antiquity. Because of the supposed intimate connection between celestial bodies with divine beings, the religious implications of astronomy were developed very early and have been persistent.

When Copernicus laid the foundations of modern astronomical ideas, it seemed at first as though the very foundations of faith were cut away. Then came Newton, with his laws of the motions of the heavenly bodies.

"A great revolution of thought was involved in this substitution of permanent natural law for the conception of a world in which all events were believed to be reflections of the moods of a benign or angry God," said Sir Richard.

"The intellectual expansion thus brought about, together with the sense of justice which resulted from the existence and permanence of Law in Nature, profoundly influenced human thought and resulted in social changes which had the greatest civilizing effects.

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GENERAL SCIENCE

Photos of Sun and Moon Make Ceiling Decorations

See Front Cover

THE AUDITORIUM of the Carnegie Institution of Washington's new Elihu Root Hall is topped by ceiling transparencies made from spectroheliographs. These are shown on the front cover.

In the center, four feet across, is a combination of sun photographs, one taken with the violet light of calcium and showing the sunspots particularly well, and another taken with the red light of hydrogen showing the solar prominences.

The transparencies of the moon, each 20 inches in diameter, show the moon in eight phases.

All these photographs were originally taken at Mount Wilson Observatory.

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PUBLIC HEALTH

South America Has Horse "Sleeping Sickness"

HORSE "sleeping sickness," which has been epidemic among horses in the United States and Canada and has even attacked the human population, killing several children, has now broken out among horses in northern South America. (*Science*, Dec. 2)

Brains of horses dying of the disease, sent by the Ministry of Agriculture of the Venezuelan government and Dr. Gunnar Tryde of Caracas, Venezuela, have been examined by Drs. C. E. Beck and Ralph W. G. Wyckoff of the Lederle Laboratories at Pearl River, N. Y. The virus of the Venezuelan horse epidemic, they report, is different from the viruses of both Eastern and Western types of the North American horse disease. A remote relationship may exist between the Eastern and the Venezuelan virus strains, but more study will be needed to settle this point.

Inquiry at the U. S. Public Health Service in Washington indicates that no human cases of the disease have been reported from South America, but that horses in the Argentine have been attacked by the Western type of the disease.

Science News Letter, December 17, 1938

ARCHAEOLOGY

Finds at Olynthus Upset Old Ideas of Greece

ONE of the neat landmarks in Greek art and archaeology has been wiped out.

The landmark was as familiar to classical students as the year 1776 would be in American history. It was briefly this: That the year Alexander the Great died, 323 B. C., marked the end of the Greek Hellenic era and what it stood for, and the beginning of all things Hellenistic.

Actually, it now appears that Greeks were going Hellenistic for generations before that boundary-line date. It is, to use another historic comparison, as though Victorian customs had come in years before Queen Victoria.

Excavations at Olynthus by Prof. David M. Robinson of the Johns Hopkins University and Prof. George E. Mylonas of Washington University, St. Louis, have revealed realistic statues and mosaics, such as supposedly only the Hellenistic Greek world introduced. The Hellenic era had been idealistic in its art and attitudes. The Hellenistic era,

when Greeks were sharing their civilization throughout the ancient world, was a time of realism.

Olynthus was Hellenistic before its time, even in the plan of its streets.

And yet—Olynthus was wiped off the earth in one terrific day of destruction by Alexander the Great's father, Philip of Macedon. The year was 348 B. C., Alexander was a small boy.

In many ways, Olynthus has proved a revelation for archaeologists who are unearthing its foundations. For the first time, Greek city life of the fifth and fourth centuries B. C. can be studied, as entire residential blocks are unearthed.

Thirty houses have been cleared this year. All are mere floor plans, bordered by wall stumps. The irate Philip left nothing more. But these are enough to show the spacious style of classic Greek homes, the mosaic floorings, modern drainage, colors of paint, relief-paintings that decorated the walls. And in the wreckage have been found quantities of broken lamps, vases, keys, knives, and other household furnishings of the Olynthians who were Hellenistic in the Hellenic age.

Science News Letter, December 17, 1938

PHYSIOLOGY

College Athletics Do Not Increase Size of Heart

X-RAY studies showing that college athletics do not increase the size of the heart are reported by Drs. Ancel Keys and H. L. Friedell of the University of Minnesota Medical School. (*Science*, Nov. 11)

The studies, made by X-ray kymograms, were of three groups of college students: athletes, non-athletes and intermediates, consisting of moderately successful competitors in one major sport.

Pointing out that the number of persons compared was "somewhat small," the investigators conclude tentatively:

"Continued successful participation in strenuous sports through the college years does not lead to any significant increase in the size of the contracted heart in rest. If we may assume, as seems reasonable, that there is no great difference in the degree of emptying of the ventricles at contraction, this would mean that the relative muscle mass of the heart is also practically unaffected."

"The degree of relaxation and filling of the heart in diastole is very much greater in the athletes than in the non-athletes, the moderate athletes being intermediate but closer to the non-athletes."

Science News Letter, December 17, 1938

IN SCIENCE

PSYCHOLOGY

Science Service Receives Dollar Bill Clipped To Postal

JIM FARLEY can be proud of his boys today. They're honest.

A dollar bill clipped to an ordinary business reply post card was received intact and in place by the SCIENCE NEWS LETTER, from a subscriber in Glendale, Md. Sent by Frank D. Roys, the card was one day in transit.

It bore on one side, with an arrow calling attention to it, the writing, "One dollar attached."

"It proves the integrity and honesty of the men who handle the mail," J. M. Donaldson, deputy first assistant postmaster general, declared. "It certainly doesn't happen often; such occurrences have happened only half a dozen times to my knowledge."

"I've never run into anything like it in 21 years of direct mail advertising work," Troy M. Rodlun, the magazine's circulation consultant, remarked.

Science News Letter, December 17, 1938

MEDICINE

New Drug Cures Gonorrhea By Acting As Antitoxin

NEW light on how sulfanilamide works a cure in gonorrhea, one of the many ailments that are apparently being conquered by this chemical remedy, has been reported by Drs. C. M. Carpenter, P. L. Hawley and G. M. Barbour, of the University of Rochester, N. Y., School of Medicine and Dentistry. (*Science*, Dec. 2)

The chemical acts like an antitoxin, it appears from studies made with mice and reported by the Rochester scientists.

Going on the theory that the germ of gonorrhea produces a "toxin" or poison in the body, these scientists prepared a very potent batch of this gonorrhea "toxin" and gave it to mice. All the mice died within 24 hours. The same lethal amounts of the "toxin" was given to another group of mice which also got sulfanilamide. All but four of these 94 sulfanilamide-treated mice survived.

Science News Letter, December 17, 1938

SCIENCE FIELDS

MEDICINE—BIOLOGY

Cancer Cells Survive Long Freeze at 70 Below

CANCER cells can be kept for more than a year at the very low temperature of 70 degrees Centigrade below the freezing point of water, and when thawed out and implanted in mice still prove themselves fully virulent and able to cause the disease.

This discovery, of much interest to researchers on the cancer problem, is reported (*Science*, Dec. 2) by Drs. C. Breedis and J. Furth of Cornell University Medical College.

Drs. Breedis and Furth experimented with many different kinds of cancer cells, taking an hour to get them frozen to the low temperature, at which they were then kept for periods of from one to 440 days. The thawing out was done rapidly, for it was found that slow thawing was more apt to injure the tissue.

Science News Letter, December 17, 1938

PSYCHIATRY

"Emotional Divorce" Is Recognized Mental Disease

DIVORCE is a disease and not just a legal concern in the opinion of Dr. Philip R. Lehrman, New York psychiatrist.

Attempting to deal with unhappy marriages in the courtroom without any endeavor to look into or treat the state of mind that causes such marital upsets is all wrong, he believes.

"Legal divorce is a pseudo-remedy for a self-diagnosed condition," Dr. Lehrman said in a report to the *Psychoanalytic Review*. The middle-aged woman who runs to a lawyer and asks him to get her a divorce is just like the person who, because of a pain in her back, decides that she has kidney trouble and asks a surgeon to remove the kidney.

If a lawyer goes about the routine of securing the divorce without discovering what really is wrong with his client, he is like a surgeon would be who accepted the self-diagnosis of his patient and, without physical examination, went ahead and took out the kidney.

"Emotional divorce," is the name Dr.

Lehrman has applied to the mental disease which causes women to rush to the divorce court. He has found certain symptoms so characteristic of the sufferers that he has been able to draw a composite portrait of the woman with this ill.

She is in her fourth decade of life. Her children require little physical care and, in fact protest any continuation of the role of dependency which the mother, out of her own needs, tries to maintain.

If childless, she makes the husband the recipient of attentions which are more suitable to a child than to a man.

She has recently lost her father either by death or distance and has showed lack or inadequacy of mourning.

She shows pathological character changes, is hostile and feels deprived of something fundamental by her husband.

Paranoid trends take the form of acute jealousy and symptoms of melancholia with garrulity are evident.

Attempts to ease her conscience are made by being easily drawn into idealistic social movements.

Science News Letter, December 17, 1938

MEDICINE

New Trichinosis Test Developed by Health Service

A NEW and improved material for more reliable diagnosis of trichinosis, serious and sometimes fatal disease that comes from eating underdone infected pork, has been developed by John Bozicevich of the National Institute of Health, the U. S. Public Health Service has announced.

Approximately one-sixth of all persons in a large group examined by the National Institute of Health are estimated to have in their bodies the tiny parasitic worms that cause the disease. Federal health authorities believe that the disease occurs far more frequently than is indicated by the total of 5,000 to 6,000 cases that have been reported in the United States since the disease was first recognized.

Use of the new test material is expected to result in increased numbers of cases being diagnosed by physicians. The new material can be used in either of two tests. One of these is a skin test similar to the Schick test for diphtheria. The other is a blood test.

Thorough cooking of pork before eating it is the simple method of avoiding trichinosis recommended by health authorities.

Science News Letter, December 17, 1938

ZOOLOGY

Eel So Thin It Looks Like Piece of String

AN EEL so thin that it could be put through the eye of a darning-needle, captured by Dr. Paul Bartsch off the coast of Cuba, has been added to the collections of the Smithsonian Institution. It is about the size of ordinary wrapping twine at its head end, and tapers to tail of silk-thread-like diameter.

Only two similar specimens are known in all the world's museums. A second specimen is in the Smithsonian collections, taken in a brook in New Guinea several years ago. The third was found at the South Sea island of Tahiti by H. W. Fowler of the Academy of Natural Sciences of Philadelphia.

Science News Letter, December 17, 1938

PUBLIC HEALTH

Chemistry and Physics In Aid of Our Health

ONE of the brightest spots on the picture of tomorrow's health is being painted in today by chemists and physicists working with physicians and other medical scientists.

The X-ray was an early important contribution of physics to the healing art and science. The tagged atom of artificially radioactive material, made in the atom-smashing cyclotron, is the latest such contribution. X-rays enable physicians to see inside the body, to see broken bones, ulcers and even cancers of internal structures. Tagged atoms are helping scientists to trace the distribution of various chemicals in the body tissues.

On the chemical side, advances lately have also been very rapid. Sulfanilamide was for a long time just a waste product in the dye industry. Then suddenly, under the guise of Prontosil, it burst upon the medical world as a remedy for child-bed fever. That was only yesterday. Today sulfanilamide is on every one's tongue because it has become an effective weapon against many diseases.

It is not only by the discovery of new remedies that chemists are helping physicians to improve the health picture. Speaking on this point, Dr. Stuart Mudd of the University of Pennsylvania recently said:

"A striking aspect of recent medical progress is that both normal physiological processes and the abnormal process of disease are finding explanation in terms of the chemical substances responsible for them."

Science News Letter, December 17, 1938

ETHNOLOGY

Always Christmas

In Eskimo Land Every Day Is a Holiday, For Each Family Runs Its Own Toyshop and Children Are Loved

By EMILY C. DAVIS

IT'S Christmas all the year for lucky boys and girls way up north. For the Eskimos who inhabit Santa Claus' homeland are the greatest toy-makers on earth.

Eskimo fathers and mothers — especially fathers — produce toy boats, dolls, footballs, cook stoves, knives. They are world's champions at the business of making things to amuse their children. Why?

"It's mainly because," says Henry B. Collins, Jr., U. S. National Museum ethnologist, "Eskimos love their children so much."

Mr. Collins has made repeated expeditions to Alaska for the National Museum. He has dug up so many ancient Eskimo toys that he is convinced that Eskimos have always been like that—devoted to their small sons and daughters and expressing their interest by lavishing handmade playthings on them.

Eskimos don't cram their toy-making into any particular season. There's no burst of Christmas giving in Santa Claus' own land. Only the Christianized Eskimos keep Christmas. Young Eskimos hear something about Santa at school but not at home.

They don't think of the reindeer as a proper steed for bringing toy cargoes. Now that reindeer have been introduced into Alaska in recent years, some of the Eskimos do carve little reindeer. But

Mr. Collins says tourists are the ones who like them. They aren't made for the children, who prefer a carved dog, polar bear, bird, fox, seal, whale, or walrus.

There are no gift-giving holidays at all in Eskimo land, Mr. Collins explains. No shower of Happy-birthday-to-you presents. No Buy-the-child-a-new-toy Week. Their ceremonials occasionally call for presentations, but they are solemn and quite different, and not for children.

Eskimos make toys in the long winter evenings we hear about, and also at any other time when they think of it. They make everything that they can think of, that children would like.

Actually, young Eskimos like the same familiar toys that children the world over seem to love. The same toys have been amusing children ever since the Stone Age. The same stiff-legged animals carved in wood or ivory. The same staring dolls, and miniature dishes and tools that small fingers can hold.

But here's a surprise. Little Eskimo girls have a tomboy liking for balls. And no soft, light balls, either. They play football with a rounded ball of sealskin stuffed reindeer hair. There are several Eskimo footballs in the National Museum at Washington. Mr. Collins lent one to a Washington schoolgirl, to see whether Eskimo football is easily mastered by a young paleface.

The young lady, named Ginger, made

a determined attack on Eskimo technique and developed fair skill in one lesson. The trick is to throw the ball, kick it with your shin or top of the foot, catch it, and repeat as rapidly as possible without fumbling.

Eskimo girls can play this one-girl system for hours without tiring. When they get three other "fellows" and two balls, they play a square formation, passing the balls across and scoring.

The motley cover of an Eskimo football is made by sewing bleached and unbleached sealskin segments into a pleasing pattern. Tufts of baby seal fur are sometimes added for trimming. The hard stuffed ball, slightly weighted, is heavier than a regulation football.

Eskimo boys like football, too, Mr. Collins has observed, though they play less than the girls do. Balls, he believes, are the favorite plaything of Eskimoland.

When doting Eskimo parents hand a brand-new doll and a toy stove to a young daughter, or a shiny little harpoon to the son and heir, they are pouring out affection, but there's possibly an ulterior motive, too, Mr. Collins thinks. There usually is, when parents encourage the young to play with model things of everyday life. There's a lurking hope that the youngsters will gain familiarity with useful duties, for the day when they are grown ups.

DOLLS

Little Eskimo girls love their dolls. Usually boy dolls have up-turned mouths and girl dolls have mouths turned down. Just an Eskimo custom.





"COME SEVEN!"

Eskimo dice are shaped like ducks and men. If a piece lands right side up facing you, then you win. Eskimo name for this kind of craps is Tingmiujang and probably Santa Claus is glad he doesn't get letters from Eskimo children, in a language like that.

"Eskimos spend hours," says Mr. Collins, "in order to fashion such toys well. They seem to feel a responsibility to make miniature objects right. And they always have. Toys dug up from the trash heaps of prehistoric Eskimo villages, such as those I have excavated on St. Lawrence Island, are made with the same deliberate care.

"We find dolls, for instance, wearing amulets—just like the amulets that Eskimo mothers hang on their own babies. Sometimes the amulet is attached to a little harness on the child's body. It's something like the asafetida bag worn by children in our country to ward off diseases. The Eskimo mother feels happier if her child is wearing an amulet to ward off evils of sickness and trouble. And the Eskimo child naturally wants her doll babies protected."

The Eskimo girl with a large doll family to care for is no different from the small girl in a city. She accepts dolls of all sizes, from an inch to a foot tall, as part of the family, and there is sometimes a mama doll to take over the duties when the child mother is playing football or jumping rope.

A non-Eskimo might wonder why some dolls in Santa Claus land have smiling upturned mouths, whereas other dolls' mouths droop so at the corners. It's just a doll trait up there. Generally, it is the girl doll who has a turn-down mouth, the boy who smiles.

Doll furniture in Santa Claus' own

land is decidedly different from anything in our shops. No tinkling pianos, or painted bedroom sets, naturally. The Eskimo girl in a native home has simpler ideas. The one thing she must have is a cookstove.

It sounds like meager housekeeping. But an Eskimo stove is a combination gadget that puts our inventions to shame. When an Eskimo girl gets a tiny stove made out of a piece of soapstone or clay, she has something to play with in a dozen ways.

"The Eskimo stove," Mr. Collins explains, "is really a lamp. Eskimos used stone or pottery lamps to light their homes, to cook their meals, to melt snow and ice for drinking water, to dry clothes, to keep them warm.

"The woman of the house always had her lamp, which showed that she was the mistress of the home. So, when an Eskimo girl got a toy lamp for a gift, she felt important.

"To cook with an Eskimo lamp, the housewife filled it with seal fat oil and fitted a moss fiber wick in it and lighted the 'stove.' The pot containing the food to be cooked was hung over the lamp."

To go with a cookstove, an Eskimo girl liked to have a knife—a particular kind of knife. Her mother had a big one, used in cutting meat and cutting out clothes, and the design which was typically Eskimo was very ingenious.

Mr. Collins describes the Eskimo household knife as shaped like a modern butcher's chopping knife, with a blade of stone—it was stone in the old days, before Eskimos got iron from white men. The blade fitted into a long slot which ran along the base of the handle.

An archaeologist of the National Museum once found one of these knives made for a little Eskimo girl long ago, and was surprised to see a scooped out hole in the handle. It was just the right size for a child's index finger to fit into the hole comfortably, and the whole knife was small. On the side of the handle were several depressions for the fingers.

A modern Eskimo who happened to be standing nearby, when the find was made, said it must be a "little girl's knife" made with the special finger grips carved so that it would exactly fit the little hand.

"We have in the Museum several toy soldiers from prehistoric villages on St. Lawrence Island," says Mr. Collins. "At first glance, one of these fighters looks like the ladies in flaring skirts that you see in pictures of ancient Crete. But

actually, the tiny ivory image is a man wearing Chukchi armor.

"Chukchi armor, made out of walrus hide rings, was an invention of a Siberian tribe of that name."

Fighters wore a series of these rings like hoops to form a shirt which flared around their knees as the rings grew wider. When taken off, the hoopskirt armor collapsed into a neat telescope.

To complete his fighting togs, the warrior had a walrus-hide shield like a three-sided screen, which could be folded collar-fashion high around his head and shoulders.

The toy soldiers which amused boys in Alaska centuries ago are very small, even tinier than the usual lead soldier.

The Eskimo toy soldier is of special interest to ethnologists because it shows a link with Siberia, where this style of defensive armor came from.

Toys that once served only to amuse children often attain the dignity of being written up in scientific documents, because of the light they shed on ancient customs and migrations.

Eskimo craps, for example, serve as a clew to the roving of ancient Eskimo groups across far northern America.

The Eskimo variety of a dice game is played with little ivory birds, duck-



GIRL'S GAME

This young American learns the correct technique of kicking Eskimo football—you kick it with the top of your foot.

shape, and sometimes also with tiny men and women. If a figure lands right side up facing you in the game, it's yours.

The interesting thing about that, so far as Eskimo history goes, is that prehistoric Eskimos in northern Canada used to play this dice game, and then some of these Eskimos moved back west to Alaska, carrying this idea of amusement with them. Finding the little ivory ducks in old, buried settlements in Canada, but only in more recent settlements in Alaska, has provided one clue to an old, unrecorded migration.

Eskimo craps is a simple game. But they have a name for it. Tingmiujang. With a language like that, maybe Santa is lucky, too, that he doesn't have to read the letters an Eskimo child would write.

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Science News Letter, December 17, 1938

DENTISTRY

Pyorrhea Greatest Problem Facing Dentists Today

PYORRHEA and other diseases of the gums constitute the greatest problem facing dentists, Dr. Olin Kirkland, of Montgomery, Ala., told dentists at the Greater New York Dental Meeting.

"There is a way to treat pyorrhea successfully," Dr. Kirkland said, "but the operator must make an early diagnosis and proceed to eradicate the infective foci."

Diseases of the gums can be controlled with much less effort than caries or tooth decay and with equal assurance of success, Dr. Kirkland stated, but unfortunately the public does not know this.

More specialists in diseases of the gums are needed, Dr. Kirkland said.

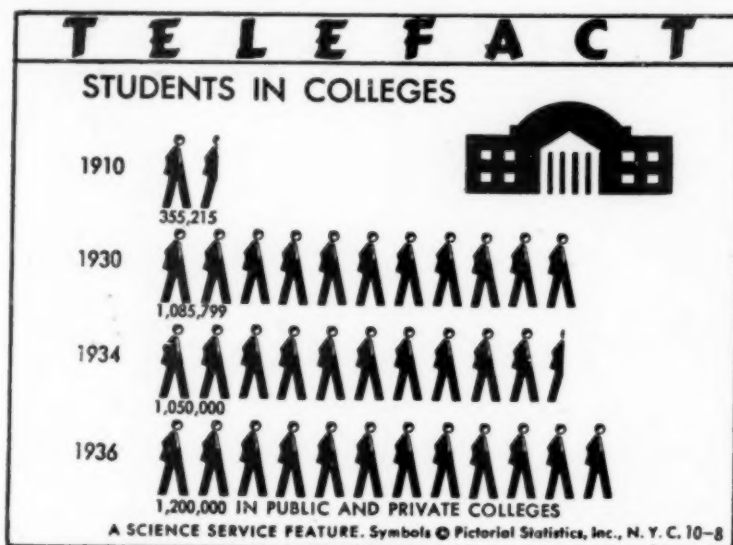
Science News Letter, December 17, 1938

The New York Zoo has a tigon, which is the hybrid offspring of a Siberian tiger and an African lion.

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PHYSICS

Introduces New Simplicity Into Atom Mathematics

All the Many Atomic Particles Are Found to Belong To Two Classes According to the Type of Their Spin

THE spin of atomic particles, the same kind of whirling which makes a top stand up on a table-top when properly spun, is now enabling scientists to find a new simplicity in nature.

All the many atomic particles—the electrons, positrons, neutrons, neutrinos, deuterons, mesotrons and all the rest—are now known to fall into one of two simple categories. Either their nuclear spin falls into half integral or into whole integral differences.

In a reply to a query of Science Service, Prof. J. Frenkel, theoretical physicist at the Industrial Institute in Leningrad, points out that all the atomic particles conform to either Fermi-Dirac or Einstein-Bose statistics, special advanced kinds of mathematics developed to interpret their properties.

Electrons, positrons, protons, neutrons and neutrinos conform to Fermi-Dirac statistics, Prof. Frenkel says, and he suggests that they be called "odd" particles.

The second kind of particles have whole integral spins, conform to the Einstein-Bose statistics and include photons, deuterons and mesotrons. These particles would be known as "even" particles, suggests Prof. Frenkel.

In treating the particles by mathe-

matics it turns out that Fermi-Dirac class particles can combine their half integrals of spin and thus turn over into the second kind of Einstein-Bose particles. Thus where two, four, six or any even number of them combine the result is that the Fermi-Dirac particles show properties closely like the Einstein-Bose particles.

Where three, five, seven or any odd number of Fermi-Dirac particles combine they keep their original properties. Einstein-Bose type particles cannot, of course, ever combine into the Fermi-Dirac type because of their whole integral spin values.

Prof. Frenkel is the well-known physicist who also named excitons and phonons as new concepts in mathematical physics. Exciton is a term used to designate a state of excitation moving from one atom to another in a material body, as where light would be absorbed in passing through a material like glass.

The phonon is a fictitious particle bearing the same relation to a sound wave as a photon does to a light wave. The latter is defined as a packet or bundle, of radiant energy whose magnitude is equivalent to Planck's constant "h" times the frequency of the wave

of light. By analogy a phonon would correspond to some constant times the frequency of the wave of sound under consideration.

Prof. E. Teller of George Washing-

ton University, who has been credited by Science Service with the introduction of the terms exciton and phonon, wishes to acknowledge Prof. Frenkel's clear priority for the use of these terms.

Science News Letter, December 17, 1938

PSYCHOLOGY—ENGINEERING

Driver Tests May Reject Some Who Would Be Good Drivers

Researches Aimed at Promoting Driving Safety Are Described to Highway Research Board Meeting

THE new tests of driving skill which seek to use quickness of the hand and eye, the affliction of night blindness, visual acuity and other physiological factors as a basis for issuance of drivers' licenses by state authorities were judged unsuitable for this purpose in a report presented at the meeting of the Highway Research Board.

Dr. Percy W. Cobb of the Board described exhaustive studies now being made by the Highway Research Board and the U. S. Bureau of Public Roads to determine what correlation, if any, exists between lack of certain skills and a proneness to accidents.

Using over 3,000 drivers in the State of Connecticut as a sample of the population, statisticians have been seeking all possible correlations between scores obtained on various supposed tests of driving skill and the accident records of the subjects of the tests.

The average accident record of the subjects was one accident in ten years. This is about two and a half times the rate of a six-year sample of Connecticut drivers generally, and is explained by the fact that many of the drivers selected for testing were chosen from the group having the worst accident records.

Definite correlations of accident-proneness and grades on the driving tests were detected, which cannot be assigned to chance by odds approaching a billion to one or more in some cases.

Despite this seemingly encouraging factor, it was also found that about 24 per cent. of the group with poor scores—and hence with assumed accident-proneness—had never had an accident. Thus the driver's tests fail for one-fourth of the group sampled.

Dr. Harry M. Johnson, professor of psychology at Tulane University, who began this study while with the U. S. Bureau of Public Roads, emphasized

that Dr. Cobb's report pointed to the lack of value of such tests as decisive factors in granting motor vehicle drivers' licenses.

The tests, Dr. Johnson said, would be of definite help to an employer who might wish to select the "safest" group of drivers out of a large list of applicants. Such a company would not have a responsibility about the injustice of excluding some good drivers along with the bad because its sole interest is the hiring of superior drivers.

But a motor vehicle commissioner does face this factor of possible injustice in granting licenses for driving permits. He must exclude the bad drivers from the roads if he can, but he should not, at the same time, exclude good drivers too.

While he must keep the maximum number of accident-prone drivers from the highways he must also see that a maximum number of apt drivers use the highways without interference.

This last factor cannot be obtained, Dr. Johnson said, by any driving skill test which would remove 24 per cent. of the people from the highways who scored low in the tests, but who—according to the Connecticut study—have a negligible accident record. "In a democracy," he concluded, "one need not expect such a test to be applied."

Roller Coasters a Model

OUT of the thrilling curves of giant roller coasters in amusement parks has come the newest idea for increasing highway safety.

Parabolic deflectors down the center line of a roadway have been found to give positive redirection to a speeding motor vehicle which may strike them, it was reported by Dr. Miller McClintock of

Yale University's Bureau of Street Traffic Research.

The parabolic barrier wall, Dr. McClintock said, was an outgrowth of observations in amusement parks where the cars of a roller coaster negotiate curves which are so sharp that neither flanges on the wheels nor super-elevation of the curve would normally keep the car on its track.

On roller coasters the trick is to have the side of the car mounted with rollers so that an additional restoring force is obtained.

Adapting this idea for a central barrier wall Yale traffic experts devised a sloping metal surface whose profile is a parabolic curve.

As the front tire of a car starts to ride up this surface it gradually reaches a point where the side walls of the tire press against the barrier wall. This creates a restoring force which redirects the car away from the barrier and back onto the roadway. The action is positive and gentle if the driver only allows the car to guide itself for the instant it is on the barrier. No part of the car, except the sides of the tires, touches the barrier wall.

Extensive tests of the barrier have been made in cooperation with the Michigan State highway department, Dr. McClintock said, with all types of motor vehicles, from light passenger cars to 15-ton trucks, and at speeds from 10 to 60 miles an hour. In no case was any car out of control, damaged in any way or the occupants harmed.

A full size parabolic deflector would be four and a half feet high and four feet wide at its base. It would be adapted for any highways wider than two lane roads.

Study Times for Passing

A THOUSAND feet of distance and ten seconds of time are required by the average motorist for passing at 50 miles an hour, it is shown by new studies reported by Yale University scientists to the meeting of the Highway Research Board.

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T. M. Matson and T. W. Forbes of the Yale University Bureau for Street Traffic Research have obtained an analysis of nearly 800 actual "passes" of vehicles in New England, the central west and in the far west. The results are important for highway engineers in their determinations of the proper sight distances needed on roadways to make possible the passing of vehicles without undue hazard.

Using cameras in a traveling car, the passing car was photographed to determine its distance to the rear at which the pass started, and the distance in front at which the pass was completed. At the same time a stop watch measured the length of the time taken for the maneuver.

Science News Letter, December 17, 1938

OCEANOGRAPHY

Mariners May Have To Depend on Foreign Charts

AMERICAN mariners may have to depend on foreign charts when they are in certain parts of the world, is the warning of the Hydrographic Office of the U. S. Navy in its annual report, just issued.

The Hydrographic Office has plates for something over 900 charts which are photo-reproductions of foreign charts. About one-third of these are good, another third are fair, and the remaining third are either obsolete or so badly worn that they should be replaced.

However, at the present rate of production the replacement of these bad plates can not be accomplished in less than 10 years, and in the meantime other plates now classified as still fair or good will have joined them. An increase in the chart-making personnel is indicated as necessary to remedy the situation.

Science News Letter, December 17, 1938

Fifty tons of pottery have been dug up in the excavation of the ancient British city at Colchester.



Gifts From the North

GIFTS from the East marked the world's first Christmas season. The East has been for ages a legendary land of wealth and splendor, so that it is only natural for folk to continue their visions of the three scholar-princes riding in on their camels from out the sunrise, bringing gifts of gold, and myrrh, and frankincense.

Yet for us who dwell in those lands of extreme temperature changes that are not too accurately called the "temperate" zones, the greatest gifts that nature brings to us come from the North. They follow the sled-tracks of Santa Claus, not the caravan-path of the Magi.

The snow itself is among the greatest of these gifts. A blanket of snow is that much water in natural cold storage, to be released more or less gradually, not running off quickly as rain does. This snow-storage is of especial importance in irrigated regions; there the people must very literally lift up their eyes to the hills from whence shall come their help. But even in humid lands winter snow is important as a source of soil moisture in spring: not so much April showers as January snows bring forth May flowers.

The cold itself, that comes down from

the North, is a great bounty. For the expansion and contraction of the rocks with changes in temperature, and even the alternate freezing and thawing of ice in their cracks, breaks down the earth's sterile crust into fertile soil. And the tremendous super-plows of ice, the glacial sheets, that once moved slowly over the continent, helped to make the richest of all our farm land. The corn belt of the Midwest is practically co-extensive with the glaciated area.

The ebb and flow of cold from the North and warmth from the South are the basic cause of the alternation of seasons, that give life in these latitudes much of its stimulating interest. If you look for the first robin and the first crocus in spring, if you watch the flight of wild geese in autumn and treasure the last gold and amethyst of the asters, remember always that these, too, are gifts from the North.

Science News Letter, December 17, 1938

ICHTHYOLOGY

Nesting Fish

● "It seems strange indeed to think of fish building nests and guarding their eggs and watching over their young like birds. But there are many species of fish who do this. Scientists tell us that the birds were developed from the reptiles and that reptiles evolved from fishes, so perhaps the birds acquired their habits of nest building from their fish ancestors."—A. Hyatt Verrill in *STRANGE FISH AND THEIR STORIES* (L. C. Page).

Science News Letter, December 17, 1938

ENTOMOLOGY

Impressive Aggregations

● "Locusts in migration swarm out of the sky in the Sahara borderlands, in southern Russia, in South Africa and on the Malay Peninsula in terrorizing numbers. They once did so on the Great Plains of the United States, leaving a lively memory of destruction that is still roused by the smaller migrations that may occur there any summer in spite of active control measures. I myself have seen the so-called Mormon cricket advancing from the relatively barren mountain pastures of Utah into the green fields in numbers which were not halted by the hawks, turkeys and snakes attendant on the swarm and feeding greedily; or the active assaults of men and children warned out to protect the cultivated lands. Migrating army worms and chinch bugs present equally impressive aggregations."—W. C. Allee in *THE SOCIAL LIFE OF ANIMALS* (Norton).

Science News Letter, December 17, 1938

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Additional Reviews
On Page 400

Physiology

INSULIN: ITS CHEMISTRY AND PHYSIOLOGY—Hans F. Jensen—*Commonwealth*, 252 p., \$2. This monograph, consisting of a "comprehensive review of the latest developments in the chemical and physiological investigations of insulin," will be valuable to other investigators in this field and to medical scientists generally who wish to keep their knowledge of the subject up-to-date but lack the time to read the vast numbers of published reports.

Science News Letter, December 17, 1938

Physics

COLOR AND COLORS—Matthew Luckiesh—*Van Nostrand*, 205 p., \$3. Colors and how to use them, are described in this interesting text by a recognized expert in the field of light.

Science News Letter, December 17, 1938

Chemistry

AN INTRODUCTION TO INDUSTRIAL RHEOLOGY—G. W. Scott Blair—*Blackiston's*, 143 p., \$2.25. Rheology, the science of plastic flow which governs the behavior of such widely divergent things as road foundations, the new plastic materials and glass, or ice cream mixes and the clay of pottery, is a subject which—by self-confession—badly needs to have its story told to the layman. This book of British origin will help in this direction somewhat, but it is primarily designed for the expert already in the field, or a scientist about to enter it.

Science News Letter, December 17, 1938

Engineering

ALL ABOUT SUBWAYS—Groff Conklin—*Messner*, 212 p., illus., \$2.50. If every person in New York City alone who has watched contractors building a subway were to buy this book, it would immediately be a best seller; for the topic is one with wide appeal. Here is a layman's book that tells all about it with a multitude of excellent pictures.

Science News Letter, December 17, 1938

Biography

I SWEAR BY APOLLO: A LIFE OF MEDICAL ADVENTURE—William E. Aughtinbaugh—*Farrar & Rinehart*, 420 p., \$3. The author is a physician who has had an adventurous life and writes about it in a very entertaining fashion.

Science News Letter, December 17, 1938

Agriculture

BIBLIOGRAPHY ON SOIL EROSION AND SOIL AND WATER CONSERVATION—Stanley H. Gaines, Comp.—*Govt. Print.*

Off., 651 p., 60 c. An annotated bibliography arranged in sections, as Climate and Physiography, Flood Control, Gullies, etc. The recency and rapidity of development in the field of soil conservation is interestingly attested by the fact that few of the books and articles listed are more than five years old, and hardly any of them more than ten.

Science News Letter, December 17, 1938

Psychology

A LABORATORY MANUAL IN GENERAL EXPERIMENTAL PSYCHOLOGY—Norman L. Munn—*Prentice-Hall*, 286 p., \$1.90.

Science News Letter, December 17, 1938

Ornithology

BIRDS OF THE PACIFIC STATES (New printing)—Ralph Hoffmann—*Houghton Mifflin*, 353 p., \$3.50.

Science News Letter, December 17, 1938

Physics

INTRODUCTORY QUANTUM MECHANICS—Vladimir Rojansky—*Prentice-Hall*, 544 p., \$5.50. Text on quantum mechanics which is primarily for graduates and advanced undergraduate students.

Science News Letter, December 17, 1938

Chemistry

CHEMICAL TABLES FROM THE HANDBOOK OF CHEMISTRY AND PHYSICS—Charles D. Hodgman, ed.—*Chemical Rubber Co., of N. Y.*, 1383 p., \$2.50. The widely used Handbook of Chemistry and Physics has now become so large that the publishers have found it expedient to remove from it, and print separately, the tables of interest to chemists alone.

Science News Letter, December 17, 1938

Bibliography

DOCTORAL DISSERTATIONS ACCEPTED BY AMERICAN UNIVERSITIES 1937-1938—Donald B. Gilchrist, ed.—*Wilson*, 109 p., \$2.

Science News Letter, December 17, 1938

Engineering

A. S. T. M. STANDARDS ON COAL AND COKE—*American Society for Testing Materials*, 152 p., \$1.25.

Science News Letter, December 17, 1938

Crafts

MAKE IT YOURSELF—Julian Starr, Jr.,—*Whittlesey House*, 333 p., illus., \$2.50. Here is another of those books which all home basement carpenters will find valuable. Construction details of over 60 different things from false fireplaces to outdoor trellises are described with copious illustrations.

Science News Letter, December 17, 1938

Physiology

A DICTIONARY OF FOOD AND NUTRITION—Lulu G. Graves and Clarence Wilbur Taber—*Davis*, 423 p., \$3.50. Here is a book that should prove useful to large numbers of persons. Besides the definitions of various foods and of nutritional terms, there are tables on the digestibility of foods, temperatures for baking and for refrigeration, height and weight, nutritive values of foods, purins, body constituents, normal blood pressure, and many others. Members of the medical and allied professions will find it useful and so will housewives, for the definitions are not technical.

Science News Letter, December 17, 1938

Mathematics

FIGURING WITH GRAPHS AND SCALES—Herbert G. Smith—*Stanford Univ. Press*, 62 p., \$1. How to use graphs in the solution of many practical problems.

Science News Letter, December 17, 1938

Chemistry

THE TECHNOLOGY OF SOLVENTS—Otto Jordan—*Chemical Pub. Co., of N. Y.*—351 p., \$10. This book treats the subject of solvents most exhaustively from both the theoretical and practical points of view. Explicit detail is given for all cases.

Science News Letter, December 17, 1938

Forestry

THE NATION'S FORESTS—William Atherton Du Puy—*Macmillan*, 261 p., \$3. A popular book, excellently illustrated, telling of the forests America once had, of the fragments remaining, of means being used to protect, propagate, and utilize new ones.

Science News Letter, December 17, 1938

Zoology

ANIMAL LIFE IN FRESH WATER—Helen Mellanby—*Chem. Pub. Co. of N. Y.*, 296 p., \$3.50. A convenient-sized, cleanly-illustrated book about all the wriggling, swarming life of pond and stream, except vertebrates. Although written in and for Great Britain, there is so much general similarity among freshwater forms throughout temperate-zone lands that it will be useful on this side of the Atlantic also.

Science News Letter, December 17, 1938

Botany

AN INTRODUCTION TO BOTANY (2d ed.)—Arthur W. Haupt—*McGraw-Hill*, 396 p., \$3.

Science News Letter, December 17, 1938

•First Glances at New Books

Additional Reviews
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Physiology

MAN AND HIS BODY—Howard W. Haggard — *Harper*, 594 p., illus., \$4. Dr. Haggard's latest book can best be described as a non-technical text and reference book on physiology, health and disease for the intelligent layman. An interesting feature is the section on Principles of Medical Terminology which tells how to figure out the meaning of a word like myocarditis when you see it in the newspaper or hear a physician use it.

Science News Letter, December 17, 1938

Botany

THE STRUCTURE OF ECONOMIC PLANTS—Herman E. Hayward—*Macmillan*, 674 p., illus., \$4.90. What a plant will do depends in large measure on how it is constructed. Understanding of the anatomy of economic plants often supplies the clue for the solution of problems of improvement through genetics, control through physiology and ecology, or protection against diseases and insect pests. This book makes a direct approach, using a number of typical plants of economic importance as material.

Science News Letter, December 17, 1938

Agriculture—Economics

THE GERMAN FAT PLAN AND ITS ECONOMIC SETTING—Karl Brandt—*Food Research Institute*, 344 p., \$3. A detailed and scholarly examination of the facts and implications of the German effort to render the nation independent of foreign sources of edible and technical fats and to insure the position of the home fat-producing agricultural groups.

Science News Letter, December 17, 1938

Astronomy

STELLAR DYNAMICS—W. M. Smart—*Cambridge (Macmillan)*, 434 p., \$8.50. Advanced mathematics for the advanced astronomer. Strictly a text for the specialist in the field.

Science News Letter, December 17, 1938

Chemistry

THE MAKING AND MOLDING OF PLASTICS—L. M. T. Bell—*Chemical Pub. Co.*, 242 p., \$5. A book of British origin in which the history, present-day practice and the probable future developments of plastic molding are discussed.

Science News Letter, December 17, 1938

General Science

STORIES OF AMERICAN INDUSTRY, Second Series—U. S. Dept. of Commerce—*Govt. Print. Off.*, 150 p., 20 c. A reprint

of the long series of radio talks sponsored by the U. S. Department of Commerce over the last year. These are interesting summaries of the fields covered.

Science News Letter, December 17, 1938

Physics—Juvenile

THE WONDERS OF WATER—Marian E. Baer—*Farrar & Rinehart*, 122 p., illus., \$1.50. Children's book about the story of water which would be suitable reading in the elementary schools. Illustrations will catch young interest.

Science News Letter, December 17, 1938

Medicine

JACOB HENLE: ON MIASMATA AND CONTAGIA—George Rosen, translator—*Johns Hopkins*, 77 p., \$1. Here is a translation of the first presentation of the modern germ theory of disease, a theory which has been proved a fact in the 98 years since the work was published, and on which is based the present control of a wide range of serious communicable diseases. The translator's introduction gives the reader a good background for appreciating and understanding the text.

Science News Letter, December 17, 1938

Engineering

ENGINEERING APPLICATIONS OF AERIAL AND TERRESTRIAL PHOTOGRAMMETRY—B. B. Talley—*Pitman*, 612 p., illus., \$10. The hows, ways and whys of aerial mapping explained in full detail in what should be a reference book of the first rank.

Science News Letter, December 17, 1938

Medicine

OUR COMMON AILMENT—Constipation: Its Cause and Cure—Harold Aaron—*Dodge*, 192 p., \$1.50. Practical and sound advice is given by the medical consultant to Consumers Union of U. S. Inc.

Science News Letter, December 17, 1938

Chemistry

THIRD REPORT OF THE COMMITTEE ON PHOTOCHEMISTRY—*National Research Council*, 156 p., \$1.

Science News Letter, December 17, 1938

Biology

RÉSULTATS SCIENTIFIQUES DU VOYAGE AUX INDES ORIENTALES NÉERLANDAISES DE LL. AA. RR. LE PRINCE ET LA PRINCESSE LÉOPOLD DE BELGIQUE—*Musée Royal d'Histoire Naturelle de Belgique*. Vol. II, Fasc. 19, Prosobranchia et Opisthobranchia—W. Adam and E. Leloup, 209 p., illus., 8 pl.; Vol. III, Fasc. 18, Astéries et Ophiures—H. Engel, 31 p., illus., 4 pl.

Science News Letter, December 17, 1938

Anthropology

GENERAL ANTHROPOLOGY—Franz Boas, ed.—*Heath*, 718 p., illus., \$4. So large a subject is the study of man that Dr. Boas has thought it wise to produce a cooperative text book to which nine specialists, including himself, contribute chapters. The book includes not only physical anthropology but also a good deal of ethnology, folk lore, prehistoric archaeology and paleontology.

Science News Letter, December 17, 1938

Chemistry

THE CHEMISTRY OF THE AMINO ACIDS AND PROTEINS—Carl L. A. Schmidt, ed.—*Charles C. Thomas*, 1031 p., \$7.50. With the help of 15 outstanding specialists, Prof. Schmidt presents an almost encyclopedic treatise on this most important phase of biological chemistry. It will undoubtedly be one of the standard reference books in its field for years to come.

Science News Letter, December 17, 1938

Medicine

ALLERGIC DISEASES: THEIR DIAGNOSIS AND TREATMENT (5th ed.)—Ray M. Balyeat—*Davis*, 547 p., illus., \$6. A text intended for the general practitioner rather than the specialist, which covers the whole subject from the history of allergy and the hereditary factor to methods of diagnosis and treatment, including recipes for food sensitive patients.

Science News Letter, December 17, 1938

Hygiene—Juvenile

FUN AND HEALTH—Mary B. Greer—*Whitman*, 128 p., illus., \$1. Pictures and separate sets of directions for children and parents tell how to play the games which make up this book. The games are designed for children of varying ages, starting with the baby and games of the Pat-A-Cake type. The author is playground director at the Winnetka, Ill., Public Schools.

Science News Letter, December 17, 1938

Physics

PROPERTIES OF GLASS—George W. Morey—*Reinhold*, 561 p., \$12.50. As a member of the research staff of the Carnegie Institution of Washington, Dr. Morey knows, as few other men do, the basic physical and chemical properties of glass. This monograph represents work done in this field since 1924 by the author and his colleagues and correlates it with the important prior work of Schott and his collaborators.

Science News Letter, December 17, 1938